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ORIGINAL

THE DIDACTIC INTERVENTION IN PHYSICAL EDUCATION; A CASE STUDY

LA INTERVENCIÓN DIDÁCTICA EN EDUCACIÓN FÍSICA; UN ESTUDIO DE CASO

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ABSTRACT

The present study analyzes the didactic intervention in Physical Education classes during three school cycles, through participant observation applied to 12 teachers and 1,435 primary school students, taking into account the following variables: the use of time, the performance of the teacher in the teaching-learning process and the student's performance in their activities. In addition, significant differences were found between the school cycles regarding the time dedicated to the task, in the organization of materials and in attention to corrections. Significant differences were also observed by gender and by years of seniority in some sub-aspects. As a conclusion, it is affirmed that teachers in their didactic intervention dedicate very little time of motor commitment and to the task; the use of traditional methodologies persists and the students have little active participation and a sufficient change is not perceived in the teaching work through three school cycles.

KEYWORDS: Didactic intervention, teacher performance, student performance, gender, seniority.

RESUMEN

El presente estudio analiza la intervención didáctica en las clases de Educación Física durante tres ciclos escolares, mediante una observación participante aplicada en 12 docentes y 1,435 alumnos de educación primaria, tomando en cuenta las variables siguientes: *el uso del tiempo, la actuación del docente en proceso enseñanza aprendizaje y la actuación del alumno en sus actividades*. Se encontraron diferencias significativas entre los ciclos escolares respecto al *tiempo dedicado a la tarea*, en la *organización de materiales* y en *atención a correcciones*. Se observaron además diferencias significativas por género y por años de antigüedad en algunos subaspectos. Como conclusión, se afirma que los docentes en su intervención didáctica dedican muy poco tiempo de compromiso motor y a la tarea; persiste el uso de metodologías tradicionales y los alumnos tienen poca participación activa y no se percibe un cambio suficiente en el trabajo docente a través de tres ciclos escolares.

PALABRAS CLAVE: Intervención didáctica, actuación del docente, actuación del alumno, género, antigüedad.

1. INTRODUCTION

The pedagogical intervention is an intentional action in educational practice, the teaching staff in their role as learning facilitator seeks the integral formation of the individual, developing specific didactic plans that allow the foundation of knowledge, and their ability to apply them in different contexts and situations of their life. The Physical Education (PE) professional promotes learning that allows the development of competent people for life.

In different contexts, educational reforms have caused important changes in the training and performance of PE teachers (Delicado, Trujillo, García, 2018). In recent decades, the study of the interpersonal teaching style of PE teachers is a topic of growing interest due to its relationship with motivational processes and with the consequences triggered in students (Van den Berghe, Vansteenkiste, Cardon, Kirk, & Haerens, 2014). Thus, some authors argue that the positive or negative experiences generated in PE classes largely depend on the methodological approach implemented by the teacher (Gutiérrez, 2014).

One of the always present concerns of professionals in the field of physical activity is to improve their teaching intervention with didactic-pedagogical approaches aimed at healthy lifestyles throughout their lives of people, valuing the important role that the physical activity in health and citizen coexistence (Lleixà, 2017). It has been proven that the longer quality PE practice, through comprehensive teaching, will play an important role in promoting public health and the integral development of all students (Méndez-Alonso, Fernández-Río, Méndez -Giménez, & Prieto, 2015).

The PE teacher is responsible for promoting the student's specific competencies in their personal and academic development, for this requires knowledge of the contents and methodologies of PE, in addition to the characteristics of the students (Losada-Puente, Honrubia-Montesinos, & Gil-Madrona, 2020).

Physical Education responds to current challenges, focusing its interest on the search for new and innovative didactic strategies that allow students to be more protagonists in their learning, for this purpose it is possible to achieve this by creating self-managed learning scenarios, responsible and committed to ethics towards physical culture, which today is the greatest perspective of change and evolution of teaching; on the other hand, managing the PE experience, orients towards pedagogical models in collaborative learning, personal and social responsibility, PE oriented towards health and sports education (López, Pérez, Manrique and Monjas, 2016; Peiró and Méndez, 2017) .

However, the styles most accepted by teachers are those that promote participation, creativity and the development of cognitive skills and students prefer the style of inclusion, hence, traditional teaching styles are less and less accepted (Isaza & Henao, 2012). Currently, pedagogical practices need to change from traditional initiatives to convergent with the existing reality, to give a new dimension to the concept of pedagogical practice, from the interaction with others to plan, evaluate and create new projects. In addition, it is important to analyze the teaching profession, the challenges of professionalization in initial and continuing training to strengthen the educational system (Watts, Zwierewicz, & Tafur, 2022).

Following this same logic, it has been shown that intrinsic and extrinsic motivation predict satisfaction and fun in PE subject, negatively relating boredom with motivation (Baena-Extremera et al., 2016). These authors claim that the reason why students are satisfied with the EF is probably due to high levels of motivation, in this sense also recognize sport, satisfaction, motivation and beliefs of success in sport can predict motivational climate in the PE classroom, providing clues on how to organize and direct PE classes (Ruiz, J., et al 2019).

Zabala & Arnau (2014), refer that the competences of a teacher are related to the content, their didactic planning, their strategies, use of technologies, group organization, type of learning obtained, learning evaluation, classroom climate, recognition of students' emotions, among others, the development of competencies have proven to be relevant in the professional performance of teachers (Almonacid-Fierro, Feu & Vizuete Carrizosa, 2018; Jato, Cajide, Muñoz & García, 2016; Rodríguez- Gómez, Del Valle & De la Vega, 2018).

In this context, it is necessary to analyze the new model recently proposed in Mexico, from the PE perspective, which proposes a competency-based approach, from complex thinking. Even today (Jess, Atencio & Thorburn, 2017) they have found that behavioral models are still used instead of complex approaches that would promote analysis, problem solving, with flexible pedagogical interventions, giving students the opportunity to self-organize, developing collaborative and reflective

learning.

Regarding the competence approach, PE teachers value the practical nature of the subject and the wide variety of alternatives in the classroom, such as cooperative methodologies, to promote their development in students, it is the teachers with less experience but more training who are willing to work in them, unlike those of older age who resist changing their educational practices, either because of losing comfort or ignorance (Hortigüela, Pérez-Pueyo, and Fernández-Río, (2017).

It is inescapable that PE teachers identify and distinguish different methodologies for students to change their perception of the subject as the basis of knowledge management, in view of this perspective, teachers have the opportunity to innovate their teaching styles that allow students their Active and reflective participation in the teaching and practice of physical activity, a situation that entails updating in the training process of teachers (García and Baena-Extremera, 2017). Thus, the objective of the study is to know and analyze the didactic intervention of PE teachers in classes through time management and teacher and student behavior.

2. METHOD

2.1 Design

Twelve teachers, five women and seven men, participated in five PE sessions during three school cycles, corresponding to a total of 60 sessions; 1,435 elementary school students of different grades (1st to 6th) from schools in the city of Chihuahua also participated.

It is a quantitative, descriptive longitudinal panel study, in which the activities of PE teachers were observed and recorded, through participant observation during three school cycles. The independent variable was the teaching intervention and the dependent variables the use of time in the PE session, the teacher's performance in the teaching-learning process and the student's performance in their activities.

The Multidimensional Observation System of Carreiro da Costa y Piéron, in Lozano, Viciano, & Piéron (2006) was used and adjusted to the study, in which different related variables are recorded, such as the management of class time and the behaviors of the teacher and the students, to determine the possible relationship of the teacher's actions and the achievement of the students' learning, which was adapted to our interests.

For the recording of time management data, an observational tool was designed based on the recording system of Gracia & Ruiz (2017), which allowed the following five observation times: program time (PT), useful time (UT), the time available for practice (TAP), the motor commitment time (MCT) and the time dedicated on the task (TDT).

Regarding the registration of the teacher's activity, an instrument (rubric) was designed with an internal consistency of Cronbach's Alpha of .740, which considers

the following five aspects: teaching styles, feedback, task organization, organization of the material and affective interaction; the instrument recorded the levels of excellent performance, satisfactory and needs improvement.

For its part, to measure the student's activity, an instrument (rubric) was designed with an internal consistency of Cronbach's Alpha of .871, which contains the following seven aspects: practice of the planned tasks, modification of the tasks by the student, student as an observer / spectator without practice, has enough time to perform tasks, waiting his turn to practice, practices with both men and women and attends to the corrections indicated; the rubric considered the performance levels excellent, satisfactory and needs improvement.

Regarding the area of didactic planning, although it is not properly an instrument, it is a prerequisite in the observation and recording of activities, it was based on the "Key Learning 2017" program, which in its organization and structure contemplates the purposes, pedagogical approach, curricular organizers and expected learning.

The teaching group developed six didactic units to attend the process of construction of experiences and learning, in the session plan the necessary aspects for its application are specified, such as the general data of the program (educational grade, number of didactic unit, expected learning and contents) and the information and activities to be developed (activities of the beginning, development and closing phases, didactic strategies, materials, evaluation).

For the process of analysis and reflection of the didactic intervention in the meetings with the teachers, the strategy of reflective dialogue used by Guzmán, Marín, Zesati & Breach (2012) was adopted, adapting to the needs of the study, in which it is not enough that teachers reflect on their teaching intervention, but their possibilities of change have help from peers, in this case colleagues, technical advisers and supervisor.

3. PROCEDURE

For the registration and analysis of Physical Education activities in schools, a longitudinal panel design was used, in which the same participants were observed at all times of the study, to know the group and individual changes regarding the evolution of the work of his didactic intervention; the process was of three school cycles. The first school year a work session was recorded, later a reflective dialogue process and a collective meeting of teachers in the area; the second school year, with a record of two sessions, followed by a reflective dialogue process and a collective meeting of teachers in the area; the third school year with a record of two sessions, later a process of reflective dialogue and a collective meeting of teachers in the area. The disadvantage was the difficulty of keeping the same participants, since two teachers had to be discarded in the study due to changes in the school zone.

The instruments were piloted, subsequently three observers were trained to make the participant observation records. Each observer randomly selected a school

in each school year, later meetings were held to collect and analyze the results, and feedback meetings were scheduled.

On the day of the activity registration, the observers asked the teachers for their planning of the session, divided into opening, development and closing, and the aspects of time management, the activity of the teacher and the student were observed. Afterwards, meetings (dyad-triad) were held to observe and analyze their didactic intervention, as well as collective meetings of the participants to promote reflective dialogue, and finally, follow-up and advice was given to daily work.

4. DATA ANALYSIS PLAN

The normality of the data was determined with the Shapiro-Wilk test and descriptive values were calculated for each variable (mean and standard deviation). Comparisons were made between the participants grouped according to their working seniority (maximum 15 years and more than 15 years in service) and according to gender using the independent samples t-student test. In addition, comparisons were made between the observations averaged per school year (three cycles) through an analysis of variance of repeated measures for each of the variables separately. The analyzes were carried out with the SPSS version 15.0 program with a significance level of 0.05.

5. RESULTS

Of the twelve teachers observed in five different class sessions (randomly selected over a three-year period), an average of 18.83 ± 5.5 years of service was found, as well as an average of 26.25 ± 7.48 hours per week assigned to the performance of their physical education classes. Each component of the didactic intervention is described below:

Regarding the *Time* variable, the *time* element was standard in the vast majority of the sessions, with 50 min, which are those assigned for the complete development of the class; the useful time decreased by an average 5 minutes that were invested in the displacement and preparation to enter the field. The time available once all the materials were established and the session formally began decreased by around 2.5 min, corresponding to 85% of the time that had been assigned for the class. The motor commitment time had a dedication of 60% of the available time that corresponds to 51% of the total time of the program, while the time dedicated to the task was recorded in 23% of the motor commitment time, corresponding to 14.5% of the time available.

Table 1 shows the average results and standard deviation for each year of observation for each variable, where it could be determined that there are significant differences over time only for the variables of *time dedicated to the task* in the time category, *organization of materials* from the teacher's behavior category and *attention to corrections* from the student's behavior category:

Regarding the time dedicated to the task, the average values were higher in the

first year, corresponding to 30% of the time of motor commitment, with respect to the first (10%) and third year (29%), however, in all cases are below 20% of the total session time; for the other two variables, the average values were better in the second and third years compared to the evaluation of the first year. In the rest of the comparisons, no significant differences were observed, although a trend towards change could be observed in the *feedback* variables ($P < 0.06$) and in *effective interaction* ($P < 0.07$) (Table 1 and Figure 1).

The variables *teacher behavior* and *student behavior* obtained an average of 1.77 ± 0.43 and 2.24 ± 0.32 points respectively, highlighting the *effective interaction* and the *performance of planned tasks* among the elements with the highest score, the *teaching style* and *the modification of the task by the students* scored among the lowest variables (table 1).

Table 1. Descriptive results and significance for the comparison between evaluations by year

Variable	Element	Evaluation 1	Evaluation 2	Evaluation 3	Sig.
Time	Motor commitment time	24.92 ± 6.33	27.33 ± 7.89	23.25 ± 5.57	0.39
	Time dedicated to the task	2.00 ± 1.86	9.04 ± 8.14	6.79 ± 6.09	0.01
Teacher Behaviour	Teaching style	1.17 ± 0.26	1.35 ± 0.50	1.34 ± 0.50	0.31
	Feedback	1.39 ± 0.47	1.71 ± 0.55	1.71 ± 0.55	0.06
	Task organization	1.62 ± 0.41	1.71 ± 0.56	1.71 ± 0.56	0.72
	Organization of materials	1.30 ± 0.26	1.96 ± 0.59	2.17 ± 0.72	0.01
	Effective interaction	2.08 ± 0.68	2.26 ± 0.73	2.26 ± 0.73	0.07
Student behaviour	Planned tasks	2.42 ± 0.25	2.42 ± 0.60	2.33 ± 0.38	0.68
	Modification of the task	1.39 ± 0.37	1.47 ± 0.45	1.52 ± 0.22	0.61
	Student as an observer	2.22 ± 0.39	2.29 ± 0.38	2.29 ± 0.38	0.77
	Sufficient time to the task	2.03 ± 0.50	2.22 ± 0.43	2.22 ± 0.43	0.25
	Wait turn	2.25 ± 0.43	2.45 ± 0.42	2.45 ± 0.42	0.26
	Practice men and women	2.69 ± 0.43	2.65 ± 0.39	2.65 ± 0.39	0.82
	Attention to corrections	2.22 ± 0.35	2.42 ± 0.56	2.42 ± 0.56	0.04

Note: the data express mean and standard deviation

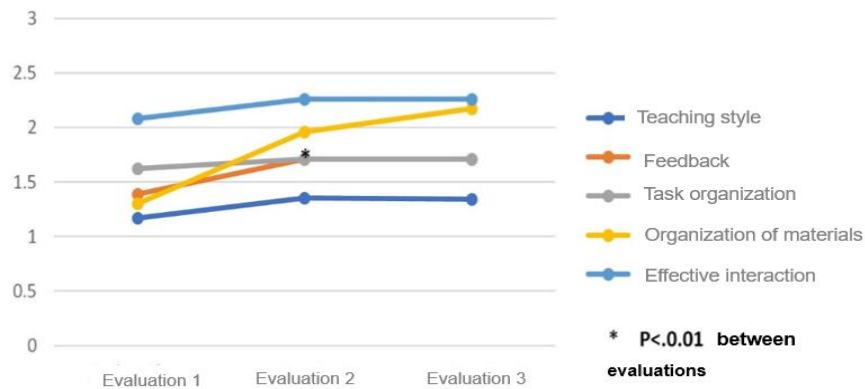


Figure 1. Average values of the elements for the category of Teacher behavior compared over time (three years).

In the comparisons by gender, it was found that the elements of task organization $t(9.37) = -2.9098$; $p < 0.016$ and organization of materials $t(8.83) = -2.6816$; $p < 0.025$ are significantly higher in women, while the other comparisons, no significant differences were found (figure 2).

In the same variables mentioned, significant differences were observed when comparing the years of service between the categories: maximum 15 years and over 15 years, finding that the first of these categories generated higher scores in the elements of organization of materials $t(9.19) = 3.7983$; $p < 0.004$, effective interaction $t(8.48) = 3.3475$; $p < 0.009$, sufficient time for the task $t(5.57) = 2.4324$; $p < 0.005$ and in the general average of the student's behavior $t(9.98) = 2.3626$; $p < 0.039$. The rest of the comparisons did not show significant differences between categories by years of seniority (Figure 3).

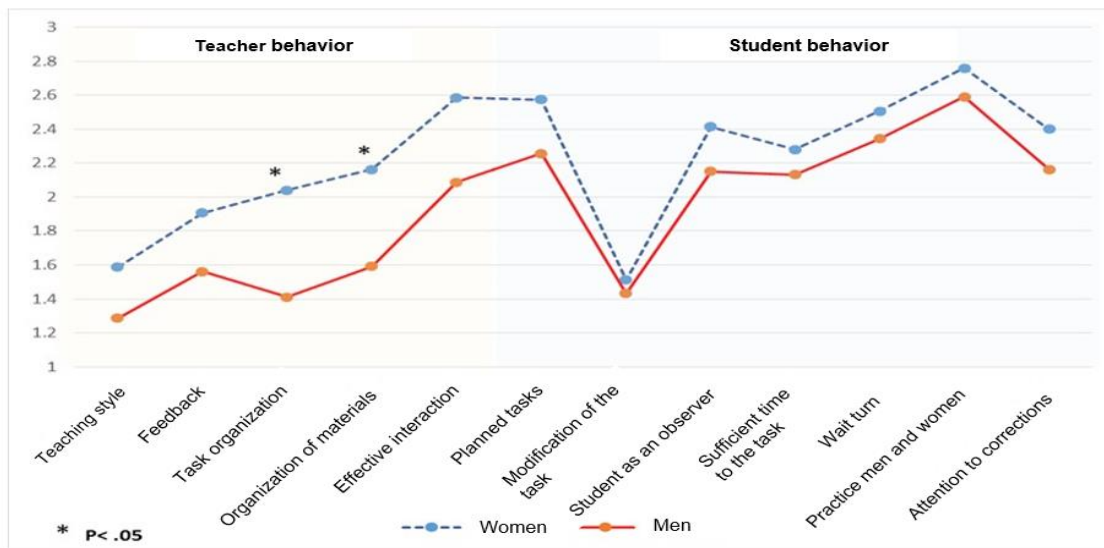


Figure 2. Average values of each of the elements of the variables teacher behavior and student behavior compared by teacher gender

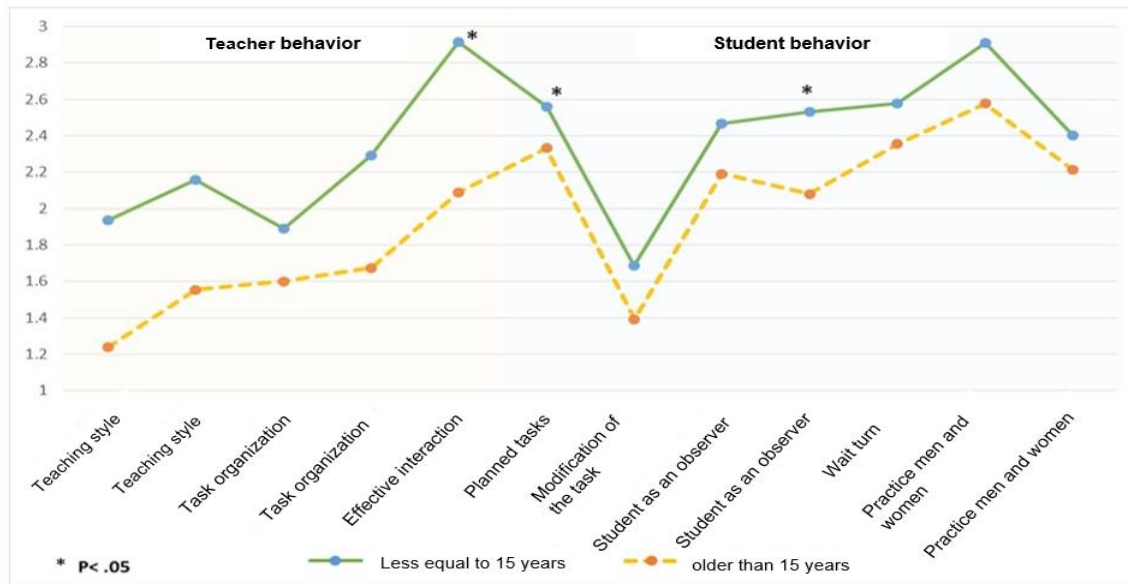


Figure 3. Average values of each of the elements of the variables teacher behavior and student behavior compared by category of seniority in the service.

6. DISCUSSION AND CONCLUSIONS

The objective of the study was to know and analyze the didactic intervention of Physical Education (PE) teachers in the sessions through the time management and behavior of the teacher and the student. In the EF 2017 program, it is mentioned that didactic planning seeks to reflectively anticipate teaching work, but what is planned or anticipated may be different in its execution or implementation, since there are unforeseen events that are impossible to anticipate. For this reason, planning should be a roadmap that gives meaning and direction to the teacher's classes, but in the classroom things can take a different course than planned, hence the importance of the objectives, since they are the ones that will allow to accomplish the student learning process (SEP, 2017). Guillamón, Carrillo, García & Moral (2020) recognize that the didactic intervention is the maximum point of interest during the development of the PE session.

In the results of the study there were two aspects to highlight, the MCT that had a 51% available time and TDT with 14.5% of the total class; Significant differences were only found in the time spent to the task, which can be interpreted as a problem in which students are not active in class and do not have the possibility of carrying out activities that promote meaningful learning. Molina, Garrido & Martínez-Martínez (2017) in their study on time management in PE sessions, found a result similar to this research, where the average time available to perform the task does not exceed 50 % of the total time of the session, and consequently the degree of activation of the students sometimes does not reach the threshold of an adequate physiological stimulus.

Regarding the time spent on the task Ruiz, Lara, López, Cachón, & Valdivia

(2019) mention that the organization and management of time in PE sessions in elementary school are essential for good teaching, and for this, teachers must consider the practice times of activities that develop the expected learning, with motivating and well-organized activities. The possibility of increasing the number of PE sessions has even been seen so that students extend the practice of physical activity, Úbeda-Palomares, & Hernández-Álvarez (2020) find that students who participated in more sessions of the subject, perceived greater motor self-efficacy and motivation, in relation to those who did it in two sessions.

The practice of the teachers in their teaching styles, organization of the task, feedback and affective interaction, there was no change in the averages during the three school years, it was only significant in the organization of the materials, which were consistent with the contents, learning objectives and facilities. The teaching style most used by teachers is directive, with instructive approaches waiting for specific answers, but it should also be mentioned that they sometimes use styles that promote problem solving. Gracia & Ruiz (2017), like us, obtain a similar result of the TCM around 50%, but the times improved when the guided discovery methodology was used, which is a way of working that allows to increase the practice times of the students.

Moreno-Murcia, Llorca-Cano & Huéscar (2020) in their study mention that the most active teaching styles promote the autonomy and development of students' skills, for this it is necessary for teachers to use strategies in which students are activated, make decisions, select contents and solve tasks, with the intention of promoting their autonomy, independence and self-management in the development of classes.

One aspect to highlight is that the training schools do not contemplate the different pedagogical approaches in the initial training of the students, León, Arija, Martínez & Santos (2020), find that only 35% of the university students in their sample indicate having received specific training in active methodologies, and outside of university training, rather through other courses, congresses, seminars and research groups.

Regarding the time dedicated to the task, it is an aspect to improve, since in our study it was low (14.5%) with a mean of 2.00 in the first school cycle, it increases to 9.04 in the second and 6.79 in the third. In the same way, Reyes, Rivas & Pávez-Adasme (2020) mention that it is necessary to increase the TCM, but it is also necessary to seek a greater use of it, not to focus only on the measurable chronological dimension, but also to extend the time of activities that promote the learning opportunities, through the teacher's management in the organization of groups, the assignment and monitoring of tasks, the use and distribution of materials and space.

In the present study, dyad-triad and collective meetings were combined, as proposed by Curcio, Peralta & Castellaro (2019) of using larger groups than small groups, in which participants have greater interaction and opportunities to contribute

their arguments. An important fact was the resistance of the teachers to change the didactic intervention throughout the three school cycles, despite the individual and collective meetings to know and analyze the teaching performance on the issues of time management, teaching work and response of the students.

Regarding the student and the PE class, they had a good response to the activities, with high averages in most of the indicators: practice of the planned tasks, student as observer / spectator without practice, has enough time to perform tasks, waiting their turn to practice, practice with both men and women, attend to the indicated corrections. Only in the modification of tasks the result was lower, this due to the directive teaching style used preferably by the teachers, however, the students responded to the activities that the teachers raised. Pacheco & Maldonado (2017) mention that, although teachers use traditional methodologies, students with active characteristics adapt to any teaching style, since they have an open mind and accept to be directed and controlled in a direct or authoritative way. Baños & Arrayales (2020) underline the importance that students in their classes have fun and feel satisfied, since on the contrary, with monotonous sessions, the possibility of dropping out of school increases. Brasó & Torrebadella (2018) on the other hand, criticize that currently a lot of attention is paid to the methodology and little to the content, that the key will be the educational intention that teachers propose, promoting a critical and emancipatory reflection to face real problems through EF activities.

Regarding the relationship between seniority and performance, the results of the teacher and student behavior significant differences were found between the older and younger teachers, in the organization of materials, effective interaction, enough time for the task. The performance of the ones that have fewer years of service was noticeable in most aspects. Unlike our Lara-Subiabre & Angulo-Brunet (2020) in their work on the reflections that teachers make about pedagogical decisions that affect student learning, they were expert level teachers (more than 10 years of service) those who by their own experience know what works in the classroom, although this could provoke little analysis and reflection on the teaching-learning process.

Also with regard to gender and performance, better values were found in women than men, significant differences were observed in the organization of tasks and materials respectively, but in the modification of tasks they have similar results. Abarca-Sos, Murillo, Clemente, Zaragoza & Generelo (2015) coincide in finding that the gender of teachers is relevant, due to the way in which women and men present their educational practices, especially in the treatment of content, but they recognize that has to be studied more deeply. Like López, Pozo, Fuentes & Rodríguez (2019) refer that teachers use a traditional methodology, although both genders work on the objectives in an entrepreneurial way, but it is women who promote initiative, entrepreneurship and autonomy in relation to the mens.

It is important to consider in future research the teaching intervention in PE, since due to the pandemic the health and education systems have had to be

adjusted, and educational authorities and teachers must prepare for the design of educational projects according to the context, as well as a return to face-to-face, distance or mixed classes.

7. CONCLUSIONS

In the didactic intervention of the teachers, there were two important aspects to consider, firstly the planning design, in which several activities were chosen that did not develop or promote the expected learning or proposed content and, secondly, it was recorded in the planning working with active methodologies such as problem solving or guided discovery and the teachers constantly led the actions. In a certain way they resorted to direct command, spending a lot of time giving explanations and activities that did not involve all the students.

In time management, the MCT is low and the students are not activated in the sessions, in the TST the expected learning is not attended since only a very low percentage are activities of the planned content, carrying out activities that are not related to them.

The student responds to the teacher's proposals only by reproducing without many possibilities of a more active participation, where he solves problems and proposes forms of action. However, students have a good response to the proposed activities, due to the active adaptation on their part.

There is no noticeable change in the teaching intervention of teachers in three school cycles, despite individual and collective meetings, actions persist with little time of motor commitment and dedicated to learning. The teaching styles during the school years are very similar, with an inclination towards direct command. In the students' response there are no changes either, this due to the teaching approaches of the teachers, it is worth mentioning that despite establishing problem solving or guided discovery in their planning, they regularly use direct command.

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